

PHARMCON

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Pharmacy Product Spotlight: Humidifiers

0.25 HOUR CE



Peter Kreckel, RPh
Retired Adjunct Assistant Professor,
Saint Francis University

Dr. Jeffrey Rosch, an esteemed allergist who practices in Altoona, Pennsylvania, gave a presentation on allergies. He is the doctor who said he never gives out cough syrup because it is his job to find out the origins of the cough.

During that presentation, he discussed alternate treatments for cough and cold. I raised my hand and said “humidifiers”. He gave me a big smile and said, “glad to see we have a pharmacist in the audience!” He said that pharmacists and doctors love to recommend humidifiers, but it’s best to use these devices with caution.

He said to get a humidity monitor before EVER recommending a humidifier, due to the molds and dust mites. He also discussed how furniture, carpets and drywall can get ruined from excess humidity. Needless to say, I am not a fan of recommending humidifiers for most patients.

Humidifiers and Dust Mites: Oh My!

“Hey doc, which humidifier do you recommend?”

We pharmacists get that question a lot.

This micro CE will address the question: “do we even want to recommend a humidifier?”

Excessive humidity may make a patient’s allergies worse, especially if they are allergic to dust mites and mold. In this situation, it’s best to keep humidity levels low. An air conditioner or dehumidifier can help to keep humidity levels below 50%, if possible, which is usually needed in the summer.

Most allergists feel that 30% room humidity is adequate. I bought a humidity monitor for around \$10 and, much to my surprise, even with all the cooking in our kitchen, our winter humidity level is around 28%.

- Every homeowner should own a hygrometer that measures temperature and relative humidity
- The ideal relative humidity for health and comfort is about 40-50%
- A local allergist told me at a presentation, “before you recommend a humidifier, recommend a hygrometer first!”
- In the winter months, a household may have to be lower than 40% relative humidity to avoid condensation on the windows
- If a parent wants a cool mist humidifier for a child who is congested or has rhinorrhea, keep in mind that it may make their allergies worse, especially if they are allergic to dust mites and mold
- Dust mites and mold like high humidity levels, so a humidifier will increase humidity and make allergies worse
- Mites contain about 70-75% water by weight and must maintain this to reproduce
 - The primary source of water for dust mites is ambient water vapor
- For dust mite control, it is best to keep humidity levels low
 - An air conditioner or dehumidifier can help

Meet your friendly dust mite:

- *Dermatophagoides farina*
 - North American dust mite
- *Dermatophagoides pteronyssinus*
 - European dust mite
- **Adult Mite Lifespan:** Up to 3 months; (3 larval stages)
- **Reproduction:** Female mites lay about 25-50 eggs
- **Habitat:** Mites live in carpet, fabric upholstery, and mattresses
- **Diet:** Human skin scale, animal dander, and trace nutrients
 - Mites need to absorb humidity, since they cannot drink water
- **Allergen:** Dust mite fecal material

- Dust mites do not bite, and they are microscopic
- **Temperature Range:** approx. 59-95°F
- **Relative Humidity Range:** approx. 55-85%

Now for some really unappealing statistics:

- A typical used mattress may have anywhere from 100,000 to 10 million mites inside
- 10% of the weight of a two-year-old pillow can be composed of dead mites and their droppings
 - The average pillow contains about 1 pound of dust mites and their droppings
- Mites prefer warm, moist surroundings, such as the inside of a mattress when someone is on it
- A favorite food is dander, both human and animal skin flakes, so your dog and cat add to their meals!
 - Humans shed about 1/5 ounce of dander (dead skin) each week
- About 80% of the material seen floating in a sunbeam is actually skin flakes

Reducing exposure to dust mites:

- Use bedding encasements that cover pillows and mattresses with zippered covers, which are impermeable to mites and mite allergens
- Wash sheets, pillowcases, and blankets in hot or warm water with detergent or dry in an electric dryer on the hot setting weekly
- Use washable, vinyl, or roll-type window covers
- Remove clutter, soft toys, and upholstered furniture. Limit stuffed animals to those that can be washed.

- Where possible, carpets should be removed or replaced with area rugs that can be cleaned/washed
- Wash bed linens weekly
- Avoid down fillings and encase comforters with fine mesh material
- Reduce humidity level (between 30% and 50% relative humidity per EPA-3)

Excess humidity can also cause:

- Damage to walls, paint, wallpaper, insulation, and ceilings
- Mold growth on household surfaces can cause health issues in sensitive individuals
- Condensation or fog forming on walls or glass surfaces, such as mirrors, pictures, or windowpanes
- Dampness around the humidifier

Types of Humidifiers

Cool Mist

These two types of humidifiers generally appear to produce the greatest dispersions of both microorganisms and minerals.

- **Ultrasonic:** Create a cool mist by means of ultrasonic sound vibrations
- **Impeller:** Produce a cool mist by means of a high-speed rotating disk

Two additional types of humidifiers can allow for growth of micro-organisms if they are equipped with a tank that holds standing water, but generally disperse less, if any, of these pollutants into the air. These are:

- **Evaporative:** Transmit moisture into the air invisibly using a fan to blow air through a moistened, absorbent material, such as a belt, wick, or filter
- **Steam vaporizer:** Creates steam by heating water with an electrical heating element or electrodes
 - o "Warm mist" humidifiers are a type of steam vaporizer humidifier in which the steam is cooled before exiting the machine

Humidifier Care

- Change the water in portable humidifiers EVERY day
- Every 3 days, thoroughly scrub out the reservoir. Rinse with hydrogen peroxide or dilute bleach solution to decrease bacteria and fungi growth (1 part bleach/9 parts water)
- Little kids can get "scalded" by warm steam vaporizers if they get too close. **Pharmacists should never recommend a "warm mist" vaporizer, especially if there are children in the home.** The American Academy of Pediatrics (AAP) recommends the use of a cool mist humidifier. Vaporizers can cause burns if the child gets too close to the steam or accidentally knocks over a device filled with hot water.
- There is no need to add anything to a warm steam vaporizer. Menthol, camphor (Vicks® Vapo-Steem) or benzoin tincture makes the room smell better, but offers no advantage over the increased moisture. Essential oils may damage a cool mist vaporizer.
- Only recommend models with an automatic shut-off feature. Should the water reservoir run dry, the device should turn off automatically.

- Recommend using distilled water in the humidifier. Tap water contains many minerals that can provide a breeding ground for microorganisms inside the humidifier.

Publications that are not supportive of humidification:

- The World Health Organization (WHO) suggests that neither steam nor cool mist therapy be encouraged in the management of a cough or cold
- Indoor air humidification at the workplace may have little to no effect on dryness symptoms of the eyes, the skin and the URT
 - o <https://pubmed.ncbi.nlm.nih.gov/34891215/>
- Lower lung injury can occur from inhaling calcium, sodium, and magnesium, aerosolized in the air by ultrasonic humidifiers. Children are more susceptible to this lung injury.
 - o <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7408721/>

Have a Great Day on the Bench!

Test Questions Pharmacist, Pharmacy Technician

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1. Which of the following statements is/are TRUE regarding the proper maintenance of a humidifier?

- a. The reservoir should only be filled with HOT tap water.
- b. Every 3 days, thoroughly scrub out the reservoir, rinsing with Hydrogen peroxide or dilute bleach solution.
- c. Essential oils may be added to a cool mist vaporizers for improved efficacy.
- d. All of the above statements are true.
- e. None of the above statements are true.

2. Which of the following statements is/are TRUE regarding the selection of a humidifier?

- a. The World Health Organization (WHO) suggests either steam or cool mist therapy be encouraged in the management of a cough or cold.
- b. Indoor air humidification at the workplace may have significant advantages on dryness symptoms of the eyes and skin.
- c. Lower lung injury can occur from inhaling calcium, sodium, and magnesium, aerosolized in the air by ultrasonic humidifiers.
- d. All of the above statements are true.
- e. None of the above statements are true.

PHARMACIST LEARNING OBJECTIVES

1. Identify appropriate recommendations and maintenance instructions for humidifiers

PHARMACY TECHNICIAN LEARNING OBJECTIVES

1. Identify appropriate recommendations and maintenance instructions for humidifiers
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OVERVIEW

Micro-learning opportunities were created in response to evidence that learning is maximized when delivered in short and focused 'bursts.' In this session, considerations for humidifier selection and maintenance are discussed.

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TARGET AUDIENCE

Pharmacist, Pharmacy Technician

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